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INSTRUCTIONS FOR MAKING THREE-HOURLY REPORTS

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The following instructions are a revision of those given in the circular, "Instructions For Stations in the Three-Hourly Net System", issued about two years ago. Such changes as are incorporated herein have become necessary through changes and revisions in the methods of making airways weather reports and the great expansion in radio and teletype facilities available, with resulting departure from uniform practice as regards the three-hourly reports.

The following has been divided into two parts, in order that a uniform practice for preparing these reports, both for transmission by radio or telegraph and by teletype may be established. They will be effective on March 16, 1932.

(A). When Transmitted By Telegraph Or As A Special Message By Radio.

1. The reports are to be filed between 30 and 20 minutes preceding the hour at 2, 5, 8, and 11 a.m. and p.m., E.S.T.

2. Under "General Conditions" the following words will be used to describe sky conditions: CLEAR, SCATTERED, BROKEN, OVERCAST, FOGGY. These terms will have the same significance, respectively, as is ascribed to the terms, CLEAR, SCATTERED CLOUDS, BROKEN CLOUDS, OVERCAST, and DENSE FOG, under I(A) on Form 1133-Aer. The term FOGGY will not be used to report a dense GROUND fog, through which the sky or stars are visible, ground fog being reported in these cases as an obstruction to vision as outlined under I(C), Form 1133-Aer.

3. PRECIPITATION, if occurring, will be reported immediately following the sky conditions, using the terms listed and defined under I(B), Form 1133-Aer. Also, the presence of thunderstorms, sandstorms, tornadoes, etc., as outlined under I(B), Form 1133-Aer., whenever these phenomena are considered to constitute a dominating element in the weather at the station at the time. Otherwise, report them under "Remarks" at the end of the message. Distant lightning or thunder should be reported directionally from the station under "Remarks".

4. OBSTRUCTIONS TO VISION will be reported immediately following the "weather" or "sky" element, using the terms listed and defined under I(C), Form 1133-Aer.

5. CLOUD CODE WORDS will be sent immediately following the "General Conditions" when clouds are present and will be limited to three in number. The usual "C" words from the 1931 Weather Code will be used, but as it is important that the odd-tenths of sky covered be enciphered, the letter "s", or the suffixes "cs" or "ics", as required, will be added to the code words to indicate this, except those for one-tenth or less. For instance, the code words for cirrus or cirro-stratus from the northwest would read as follows under this system:

CURTSY	one-tenth	CURSERS	five-tenths
CUPSAIL	two-tenths	CURSING	six-tenths
CUPSAILS	three-tenths	CURSINGS	seven-tenths
CURSER	four-tenths	CURSORY	eight-tenths
		CURSORIES	nine and ten-tenths

6. The following will govern the use of the code words:

(a). One word only will be used to report upper clouds, i.e., Ci., Ci-St., Ci-Cu., and intermediate clouds, i.e., A-ST., A-Cu., when the latter are above 10,000 feet, the dominating type being enciphered, but with the total amount of all types indicated, when more than one type is present.

(b). When two strata or levels of clouds below 10,000 feet and covering two-tenths or more of the sky each are present, both will be reported, the dominating type and total amount in each stratum being enciphered.

(c). When more than two strata of clouds below 10,000 feet, each covering two-tenths or more of the sky, are present and upper clouds are also observed, one code word will be used for the upper clouds, and the two lowest strata of lower clouds reported; disregarding the amount that may be present between the upper of the lower strata and the upper clouds.

(d). When no upper clouds can be observed, report the lower strata present in accordance with the foregoing (c), using not over two code words.

(e). Less than two-tenths of either upper or lower type clouds will not be made the subject of a separate code word, except where they are the only type, or types, present.

It should be particularly noted that the foregoing rules apply to strata or levels of clouds and not to types. That is, several types of clouds may be present in a stratum at the same level, and the dominating type and the total amount in the stratum would be enciphered.

6. CEILING:- This element which is usually the height of the base of the lowest layer of clouds covering more than half the sky, will be reported immediately following the cloud code words. It will be reported in feet to the nearest hundred feet up to 5000 feet, and to the nearest five hundred above that, as indicated by actual determination or the estimated height, when over 5/10 of the sky is covered and the clouds are of the lower or intermediate types not exceeding 10,000 feet altitude. When the clouds are over 10,000 feet altitude the ceiling will be reported as "unlimited". Ceiling heights need not be sent and no word need be entered in the report for this element when "clear" or "scattered" obtains. However, for the benefit of the forecaster, the approximate height of the lowest stratum of scattered low cloudiness covering two-tenths or more of the sky is desirable. In these reports this will be indicated by the insertion of the proper number immediately preceding the cloud code word for the lowest scattered stratum, providing the clouds are below 5,000 feet, according to the following:

ONE:- from the surface to 500 feet.

TWO:- from over 500 to 1000 feet.

THREE:- from over 1000 to 2000 feet.

FOUR:- from over 2000 to 5000 feet.

For example, if a stratum of stratus were present at 400 feet, covering say 3/10 of the sky, with 4/10 of cirrus also present, the report would read:

BROKEN CURRENCY ONE CHAINSAWS UNLIMITED.....

Other examples of typical cases might be:

OVERCAST LIGHT RAIN CONTROL (8St.-Cu.W) TWO CHARADE (2 St.W between 500 and 1000 feet) SIX THOUSAND.....

OVERCAST CUPRICS (7 Ci-St W) FOUR CIMARS (3 Cu S between 2000 and 5000 feet) UNLIMITED.....

BROKEN HAZY CUNARDS (3 Ci. SW) COINAGE (2 St-Cu SW) THREE CHINA (2 St SW between 1000 and 2000 feet) UNLIMITED.....

The determination of the sky word will be seen to depend on the total amount of clouds present, and not on the amounts in individual strata.

7. VISIBILITY will be reported in accordance with instructions given under III, Form 1133-Acr.

8. WIND:- The surface wind will be reported to sixteen points of the compass. Words amplifying this element, such as "gusty", "variable", etc., should immediately follow it, thus: "North northwest thirty, gusty".

Winds aloft will be reported in regular code and combined with the three-hourly reports by the insertion of the word "aloft" following the regular message. However, for the purpose of these reports and in order to facilitate the use of the data at the collecting centers, the levels reported will be those authorized on page 6, paragraph 3, of the Circular of December 1, 1931, "Change From 'Surface' To 'Sea Level' As A Base For Wind Aloft Reports" for use along the airways, the velocities being enciphered in meters per second as is done at present in regular coded wind-aloft messages. The first level above "surface" reported will be indicated by the proper numeral corresponding to the thousands of feet of the level above sea level, i.e., if the first level reported is the one for 1000 feet above sea level, the numeral "one" will be sent immediately following the code word for the surface wind direction and velocity at the time of observation; if 2000, the numeral "two", etc.

The procedure followed in preparing these reports should conform to that given in paragraphs 3-6, inclusive, on pages 6 and 7 of the Circular of December 1, 1931, except that the velocity values will be in meters per second instead of miles per hour.

The following will be used in determining the use of "Class 1" or "Class 2" code words for the various levels:

Class 1 Code Words:

Surface	
2,000 feet	
4,000 "	
6,000 "	
8,000 "	
12,000 "	
Maximum altitude	

Class 2 Code Words:

1,000 feet
3,000 "
5,000 "
7,000 "
10,000 "
14,000 "

The maximum altitude will be indicated when appropriate by using the altitude code words on page 15 of the 1930 Aerological Code, the values, however, to indicate feet instead of meters altitude. Words may be coined for altitudes between 15,100 and 19,900 feet, using the characteristic "TA" as the first two letters in each case. The word "TELL" will be used for 20,000 feet. For example:-

CLEAR TEN NORTHWEST FIVE INGULF JEOFAILS BEAK ALOFT MACADAM (surface, S, 2 m.p.s.) TWO (2,000 feet first level reported) MAKING (S, 6 m.p.s.) MOLOCH (3,000 feet, SSW, 8 m.p.s.), etc.,

9. Temperature and barometer will be coded, using the regular barometer / temperature code words, taken from the 1931 Weather Bureau code book.

10. The temperature of the dew point will be reported in all observations.

The use of a "J" word from the standard 1931 Weather Code (page 64, under "Rising") is authorized to stations reporting by telegraph or radio to indicate the dew point; for example, "James" is dew point 55. For dew-point temperatures below zero, use the "P" words under "Falling". For zero, the word "Jack" will be used. In all cases the "J" or "P" word will immediately follow the barometer/temperature word.

11. A pressure change word to show the 3-hourly pressure change will be selected from those for the  $0^{\circ}$  or  $100^{\circ}$  temperature in the lists on pages 37 - 46 of the 1931 Weather Code, and sent immediately following the dew point in accordance with the instructions governing their use in the regular signal reports as outlined in the Code. The words are to be included in all reports when appropriate.

The foregoing does not apply to stations where only non-commissioned personnel is employed, except at the discretion of the supervising collecting center after proper instruction has been given.

12. Remarks. -- Entries that properly come under "Remarks", and which will be sent as the last words of the message proper, will therefore be confined to such remarks as "thunderstorm passed eastward", "clearing in west", "conditions becoming worse". The "Depth of Snow" words from the regular code will be used and added to the 8 p.m. observation if there is 1 inch or more of snow on the ground.

13. Error forms. -- The collecting centers will be furnished with error forms, which will be sent in duplicate to the station where an apparent error has been made. The corrected data will be entered and the form signed by the responsible observer, one copy to be returned to the control station and the other forwarded to the Central Office.

(B). When Transmitted Along The Teletype And Radio Circuits

14. All Weather Bureau Airport Stations and those first-order stations engaged primarily in airways work along the airways, transmitting hourly reports along the airways by teletype and radio, or both, will add to those sequence reports occurring nearest the hours of 2, 5, 8, and 11 a.m. and p.m., E.S.T., cloud code words in accordance with instructions in Paragraphs 5 and 6, foregoing. Pressure change code words will also be added immediately following the cloud code words in accordance with instructions in Paragraph 11, foregoing.

15. The dew-point temperature will be entered in figures immediately following the temperature in these reports as is now done.

16. It is believed that the foregoing will be of material aid to those centers now making three-hourly forecasts and will also be of aid in preparing trip forecasts at those stations which do not now receive special three-hourly data.

EXAMPLES OF REPORTS.

In the following the example is first given as it would be sent by telegraph or as a special message by radio and second as sent by teletype:

(a). When no clouds are present:-

CLEAR TEN NORTHWEST FIVE INGULF JEOFAILS EACH.

CLR UNL 10 NW 5 40 33 3006 EACH.

(b). When 5/10 or less of upper clouds are present:-

SCATTERED CURATES TWELVE SOUTHWEST EIGHT ONUS JAMES INK.

SCTD CLDS UNL 12 SW8 60 55 3008 CURATES INK.

(c). When both upper and lower clouds are present, total amount covering over 5/10 of the sky, but neither stratum of itself covering 5/10, the lower stratum being between 2000 and 5000 feet:-

BROKEN HAZY CUNARDS FOUR COCKNEY UNLIMITED FIVE SOUTH SOUTHWEST TWENTY SORRY JAMES MILK SHOWER IN WEST.

BRKN CLDS HAZY UNL 5 SSW20 70 55 2988 SHOWER IN W CUNARDS FOUR COCKNEY MILK.

(d). When upper and lower clouds are present, the lower covering over 5/10 of the sky:-

OVERCAST LIGHT RAIN MODERATE FOG CENTRALS CHAFFINGS EIGHT HUNDRED ONE HALF EAST FIVE SURGING JIGGERS NEST.

OVC LT RAIN MDT FOG 8 HND 1/2 E5 46 45 2980 CENTRALS CHAFFINGS NEST.

(e). When two lower strata are present, the upper covering over 5/10 of the sky, the lower less than this:-

OVERCAST LIGHT SNOW CODDINGS ONE CHADDAWS TWELVE HUNDRED SIX NORTHEAST TWELVE SOUTHDOWN JADING SOAP OCCASIONAL HEAVY SNOW.

OVC LT SNOW 12 HND 6 NE12 28 26 2988 OCNL HVY SNOW CODDINGS ONE CHADDAWS SOAP.

(f). When dense fog is present:-

FOGGY ZERO ZERO CALM TILMUS JIMMY

DENSE FOG ZERO ZERO CALM 50 50 2996

(g). When no clouds are present in connection with ground fog:-

CLEAR DENSE GROUND FOG ZERO NORTH ONE DIFFICULT JUGFISH.

CLR DENSE GRND FOG UNL ZERO N1 36 36 3026

(h). When upper clouds and two strata of lower clouds each covering over 2/10 of the sky are present, the entire sky being covered, but no stratum of sufficient amount to constitute a ceiling proper:-

OVERCAST THICK HAZE CEREMONY CONTRACTS THREE CHIGAS UNLIMITED THREE QUARTERS SOUTHEAST EIGHT ARISE JELMOSS SHEK.

OVC THICK HAZE UNL 3/4 SE8 76 58 3002 CEREMONY CONTRACTS THREE CHIGAS SHEK.